	Nom :	Date :	
	Energy production The wind turbine and its tuning	Course	<u>Note :</u>
		1 ^{ère} – T ^{ale}	
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We saw previously how obtaining electricity thanks to the wind turbine but it can be efficient if only we can adjust parameters.

∞ Find in the kinematical diagram below the two parameters and indicate the device which is responsible for this:



How to tune the behaviour of the wind turbine

One way is to describe the behaviour thanks to a flowchart. Here is an example:



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Below is the flowchart ruling the wind turbine.

Sind the correct propositions in order to fill the blanks.



- Measure the wind orientation (e)
- Is the wind over 25 m/s? (f)
- Is the high speed shaft stopped? (g)
- Turn the nacelle (h)
- Are the blades aligned with the wind flow? (i)

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Exploring the inside closely

We will now look at the solutions provided by manufacturers to answer this matter. Open the video called REXROTH_DRIVE_AND_CONTROL_TECHNOLOGY_FOR_WIND_TURBINE

>>> Listen closely to the video and fill in the blanks (one word equal one line)

[0'14''] Within a few years the ______ has developed into a global industry which is experiencing significant growth rates. Modern wind turbines generate electricity ______ and _____ thanks among other factors to innovative drives and control technology. BOSCH REXROTH, one of the world leading suppliers of drive control and motion solutions offers hydraulic and technology systems making a strong partner for wind turbine ______. High precision MOBILEX GFB ______ drives insure accurate orientation with the wind and turn the nacelle slowly into the wind when the current in wind speed is reached. The compact gear drives consist each of multistage planetary gearbox and output pinion and an electric motor. These planetary gearboxes provide high gear ______ that enable very centred rotational movements. For rotor blades adjustment REXROTH offer both ______ pitch drives, which are space savingly mounted inside the ______, consist each of two or three stages MOBILEX GFB compact and output pinion and a maintenance free asynchronous motor. Drive controllers which have been developed specifically for pitch systems and redundant safety systems guarantee ________ rotor operation. Alternating rotor blade control and monitoring functions ________ continuous operation so that the wind turbine generates electricity reliably over the entire operating range. [1'59'']

[2'34''] REDULUS GPV gearboxes convert the ______ into the ______ into the ______ speed up to the ______. For wind turbine with capacities up to 2 ______
REXROTH supplies compact gearboxes. They combine a planetary gear stage with 2 ______ stages. [2'55'']

[3'23''] The yaw and powertrain ______ functions are ______ by the very compact brake power unit and optimize brake control system protects the brake power unit from unnecessary wear. [3'38'']